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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Rajeev Sharma

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EXAMINER

VANCHY JR, MICHAEL J

ART UNIT

PAPER NUMBER

2624

MAIL DATE

DELIVERY MODE

08/13/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/822,498	Applicant(s) SHARMA ET AL.	
	Examiner MICHAEL VANCHY JR	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6,9-11,16,17,20 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6,9-11,16,17,20 and 23-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 6, 9-11, 16, 17, 20, and 23-25 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The term "a few thousand" in claims 1 and 12 is a relative term which renders the claim indefinite. The term "a few thousand" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Appropriate correction is required.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. **Claims 1, 6, 9-11, 16, 20, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over "A Unified Learning Framework for Real Time Face Detection and Classification," Paul Viola, Gregory Shakhnarovich and Baback Moghaddam, and further in view of Rowe et al.,**

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US 7,257,239, and “An affine coordinate based algorithm for reprojecting the human face for identification tasks,” Kuntal Sengupta and Jun Ohya.

Regarding claim 1, Viola teaches a surveillance application which uses face detection (1.1 Face Detection), training support vector machine (SVM) based demographic classifiers with a few thousand images as an input at a learning phase (2.3 Gender and Ethnicity Classifiers) and processing said plurality of images to obtain demographic recognition of the person in the captured images using the support vector machine (SVM) based demographic classifiers (1.2 Gender Classification and 1.3 Ethnicity Classification). Both Viola and Rowe teach using a plurality of feature points (50 points within Rowe (col. 4, lines 51-61) and from 50-500 in Viola (Tables 1 and 2)). It would be clear to one of ordinary skill in the art that 3 feature points could be used instead of a plurality of points for a quicker determination of a face and its features. Viola does not teach using the demographic recognition to create a face model. Rowe teaches a model database which uses characterizing data and an image of the individual to create a model (Abstract). Rowe has a database of models which is created using images and classifiers to create gender and ethnic models (col. 5, lines 4-24). Then, an image is taken of a person (using a camera phone in this case), and with that type data is also sent (gender and ethnicity) or the person being imaged (col. 2, lines 58-65). However, modifying Rowe to include the classification system of Viola, would make it so that the gender and ethnicity would not need to be typed in, which would greatly improve the accuracy if the person taking the image is unaware of the race or gender, and make the invention applicable to imaging systems that do not have an input such as a keyboard. Rowe teaches choosing a face model specific to the demographic recognition of the person as an approximate face model (col. 2, line 66 to col. 3, line 14). Rowe teaches combining said demographic recognition with mesh adjustment technique for said face modeling, wherein said demographic recognition comprises gender and ethnicity recognition (col. 5, lines 4-24), and

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whereby the face modeling is followed by a view generation of the face using rendering tools (Fig. 1). Rowe does teach using a mesh model based upon the average position of features in a face image using demographics, however Rowe is silent on using affine coordinates. Sengupta teaches using affine coordinates for model creation (II. Affine Coordinates: Properties). It would be clear to one of ordinary skill in the art at the time of the invention to include within the processing of creating a model in Rowe, which creates mesh models using demographic information through feature points, to use affine coordinates for an accurate way of adjusting three-dimensional models.

Regarding claim 6, Sengupta teaches wherein the method further comprises a step of using affine lines and their slope adjustment, which is proportional to depth of the point, for model estimation (Fig. 3, and II. Affine Coordinates: Properties, “Thus, for every possible...”).

Regarding claim 9, Sengupta teaches wherein the method further comprises a step of using the affine line properties for re-projecting a matched pair in two images to a third image, once four facial landmarks are located in all of the three images (II. Affine Coordinates: Properties, “The four points...”).

Regarding claim 10, Sengupta teaches wherein the method further comprises a step of using a single view to crudely model the face and then use anthropometric measures for identification (Abstract, since the creation of the model is better performed with multiple views taken by a camera, it would be obvious to one of ordinary skill in the art that if one single view is taken that a crude model would be created instead of an accurate model.). Rowe teaches a model based on gender and ethnicity (col. 5, lines 4-24).

Regarding claim 11, Sengupta teaches wherein the method further comprises a step of using multiple views to model the face in the image based on

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the combination of the affine line properties and then use the anthropometric measures for identification purposes (Title and Abstract). Rowe teaches a model based on gender and ethnicity (col. 5, lines 4-24).

Regarding claim 16, see the rejection made to claim 1, for it addresses the method of this apparatus.

Regarding claim 20, see the rejection made to claim 6, for it addresses the method of this apparatus.

Regarding claim 23, see the rejection made to claim 9, for it addresses the method of this apparatus.

Regarding claim 24, see the rejection made to claim 10, for it addresses the method of this apparatus.

Regarding claim 25, see the rejection made to claim 11, for it addresses the method of this apparatus.

1. **Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mohamed et al., US 6,925,438 B2, "A Unified Learning Framework for Real Time Face Detection and Classification," Paul Viola, Gregory Shakhnarovich and Baback Moghaddam, Rowe et al., US 7,257,239, "An affine coordinate based algorithm for reprojecting the human face for identification tasks," Kuntal Sengupta and Jun Ohya and further in view of Marshall et al., 3,740,466.**

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Regarding claim 17, both Mohamed and Sengupta teach a system of capturing devices for taking images of the individual to create a three-dimensional representation. However both are also silent on using disparate cameras and different locations for image acquisition. Marshall teaches a surveillance system for capturing images of individuals using disparate cameras at different locations (Fig. 1, and col. 7, lines 25-41). It would be clear to one of ordinary skill in the art at the time of the invention to modify the combination of Mohamed and Sengupta to include disparate cameras at different locations for image acquisition for creating of the three-dimensional model, since different locations gives more data for a more accurate three-dimensional model, and the ability to use disparate cameras allows the system to have flexibility for image capturing.

Conclusion

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL VANCHY JR whose telephone number is (571)270-1193. The examiner can normally be reached on Monday - Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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